



# **Environmental Management**



## ***Applied Cost Engineering Team***

**Joint Field - Headquarters Working Group**



## ***ER Program / Project Controls & Life-Cycle Cost Estimating At The Savannah River Site***

***Presented by Terry J. Brennan***



***Center for Acquisition and Business Excellence***





## ***ER Program / Project Controls & Life-Cycle Cost Estimating***

### **Discussion Topics**



**SRS / ERD Program & Project Control  
Processes**



**SRS / ERD Life-Cycle Cost Estimating**



**SRS / Summary Life-Cycle Cost Estimate  
Example (P Reactor Seepage Basins)**



# ***SRS / ERD Life-Cycle Program Overview***

Sites Completed by FY2006 (291 sites)	\$ 832M
Long Term Operations (8 sites)	\$ 447M
Stewardship (27 sites)	\$ 112M
- Post Closure Management	\$ 42M
- RCRA Monitoring	<u>\$ 71M</u>

*Total Cost for Sites Completed by FY06 =* **\$ 1.5B**

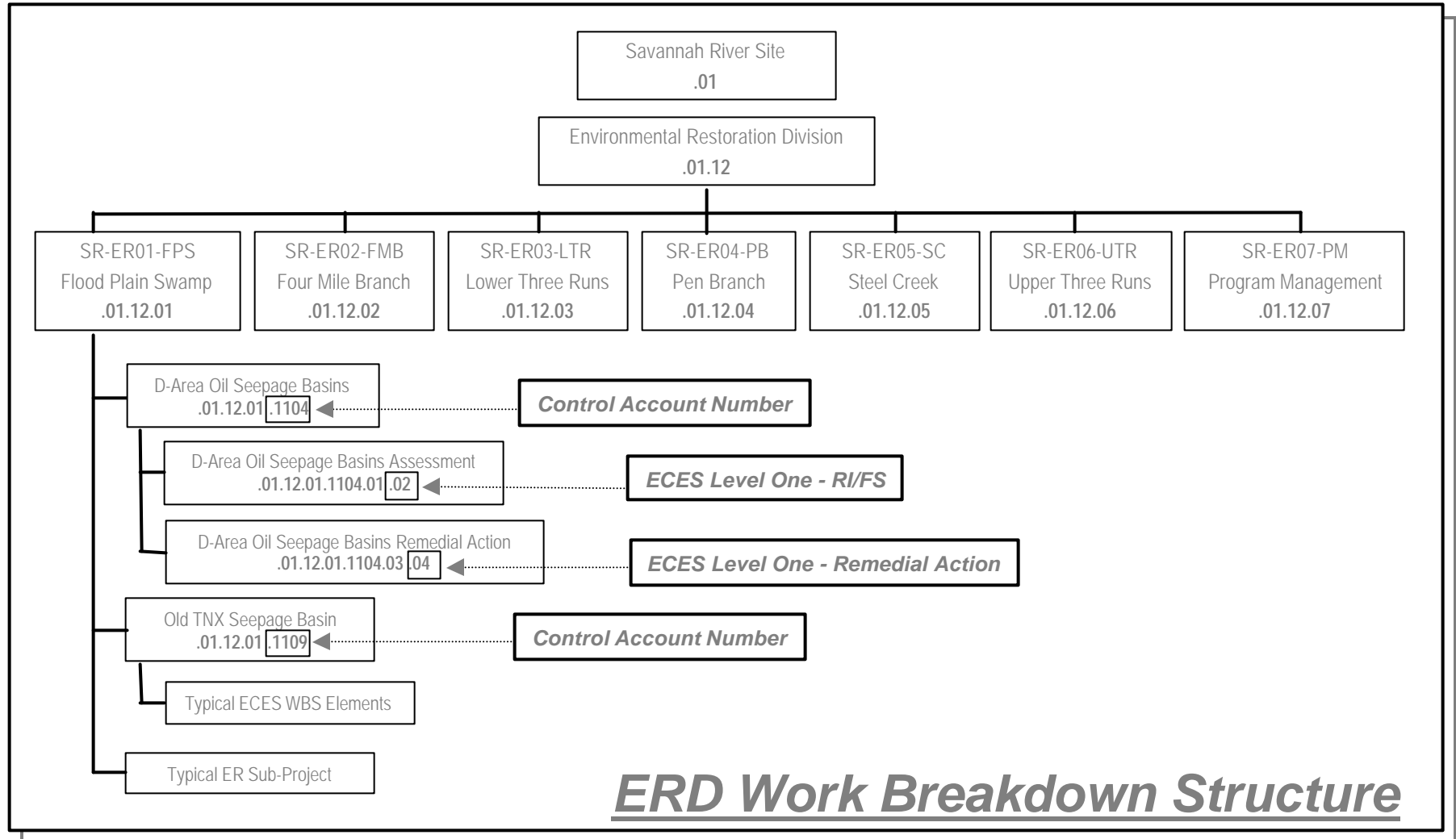
Sites Completed after FY2006 (224 sites)	\$ 1,482M
Long Term Operations (12 sites)	\$ 72M
Stewardship (31 sites)	\$ 51M
Post Closure Management	\$ 118M
RCRA Monitoring	<u>\$ 191M</u>

*Total Cost for Sites Completed FY06 to FY38 =* **\$ 1.9B**

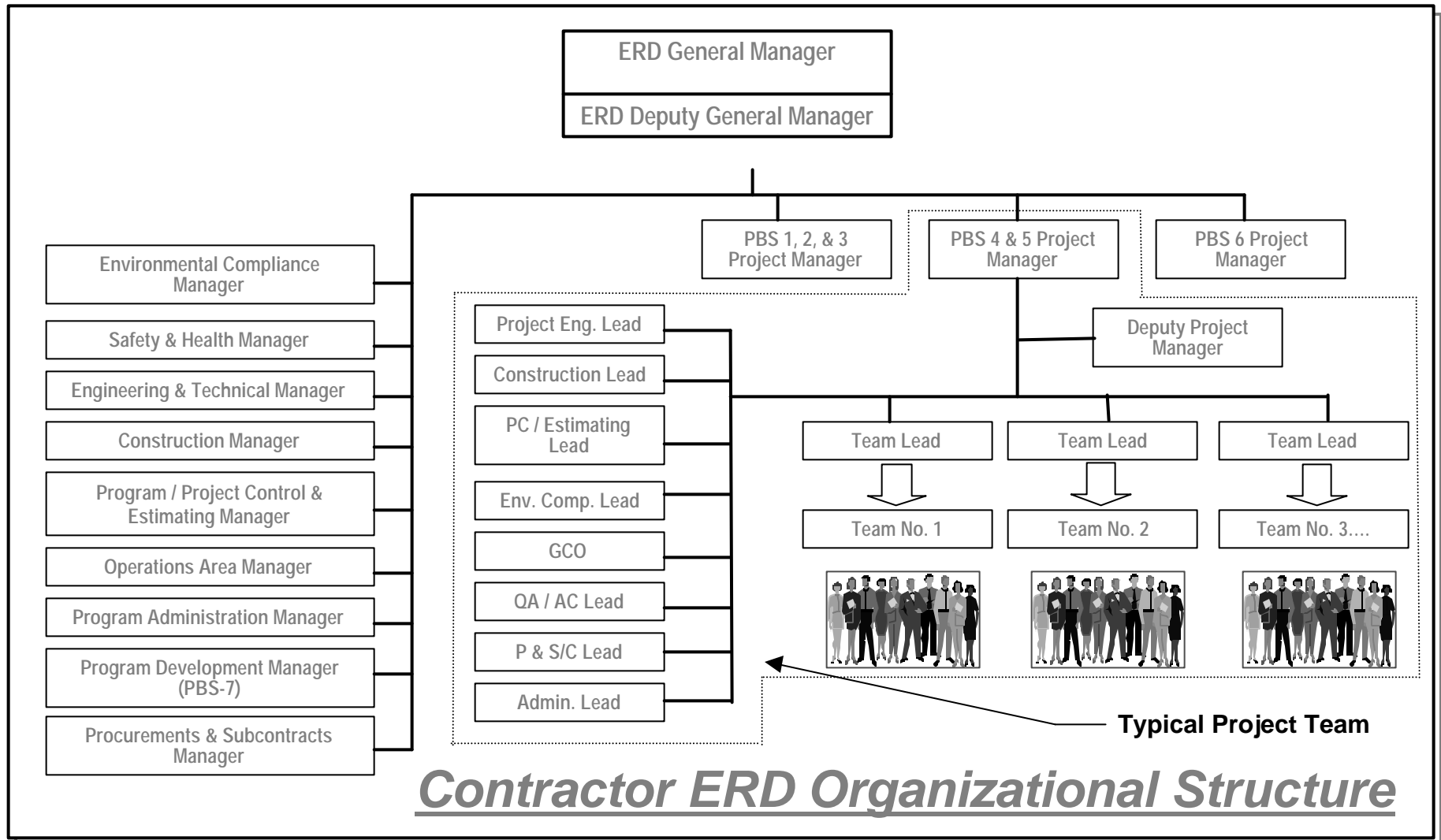
**Total Life-Cycle Program Cost (515 sites) = \$ 3.4B**



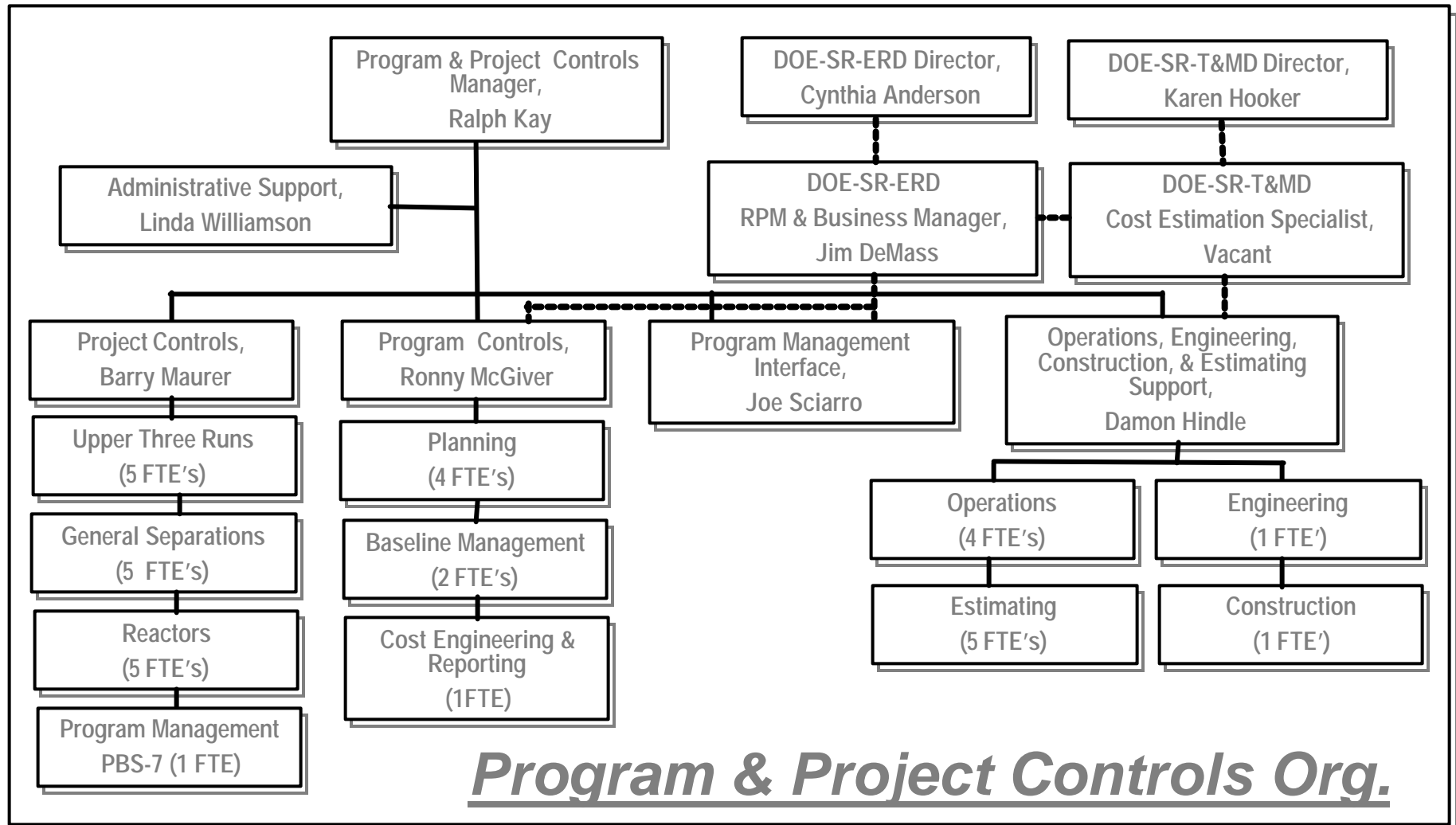
# SRS / ERD Program & Project Controls



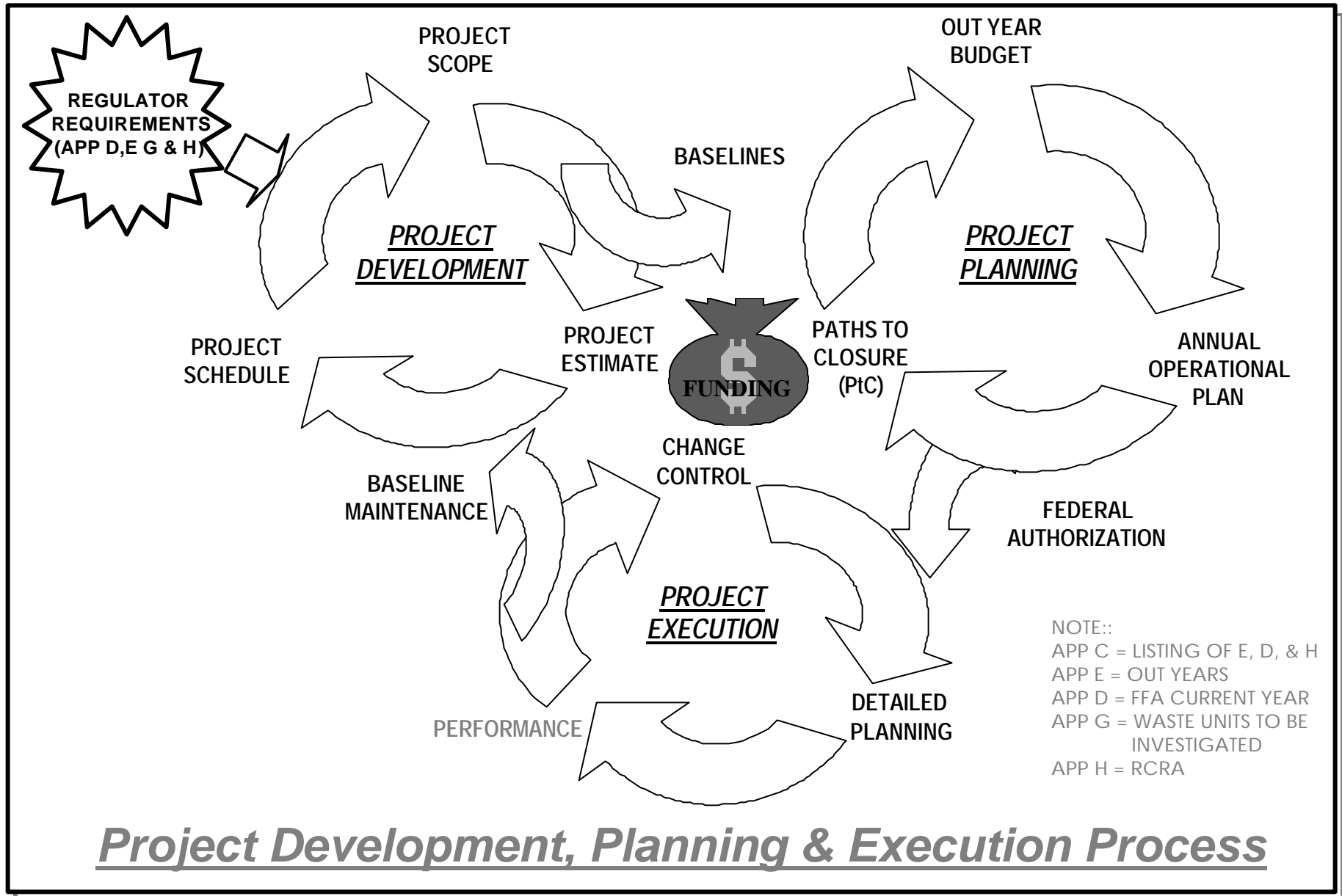
# SRS / ERD Program & Project Controls



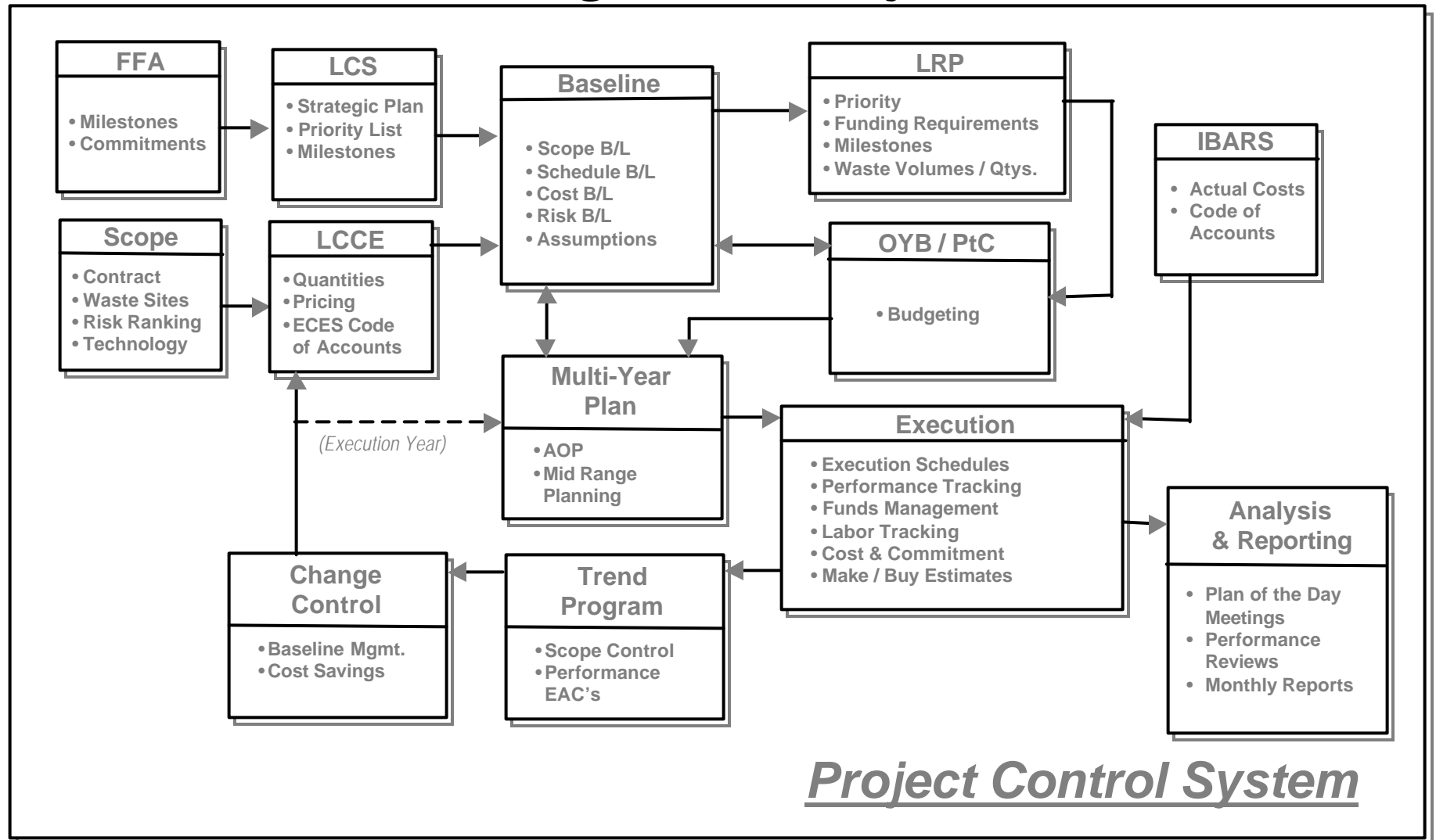
# SRS / ERD Program & Project Controls



# SRS / ERD Program & Project Controls

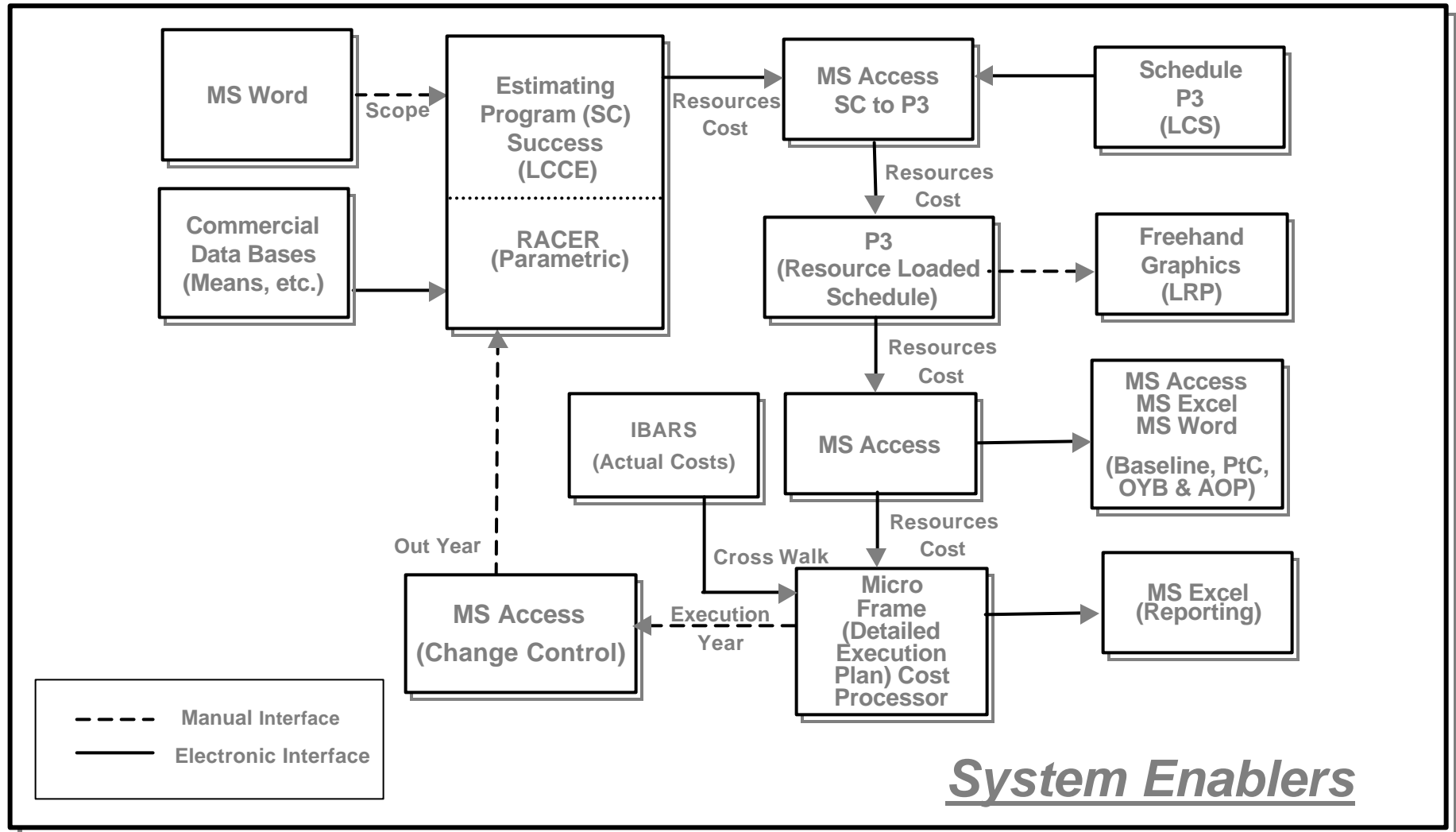


# SRS / ERD Program & Project Controls

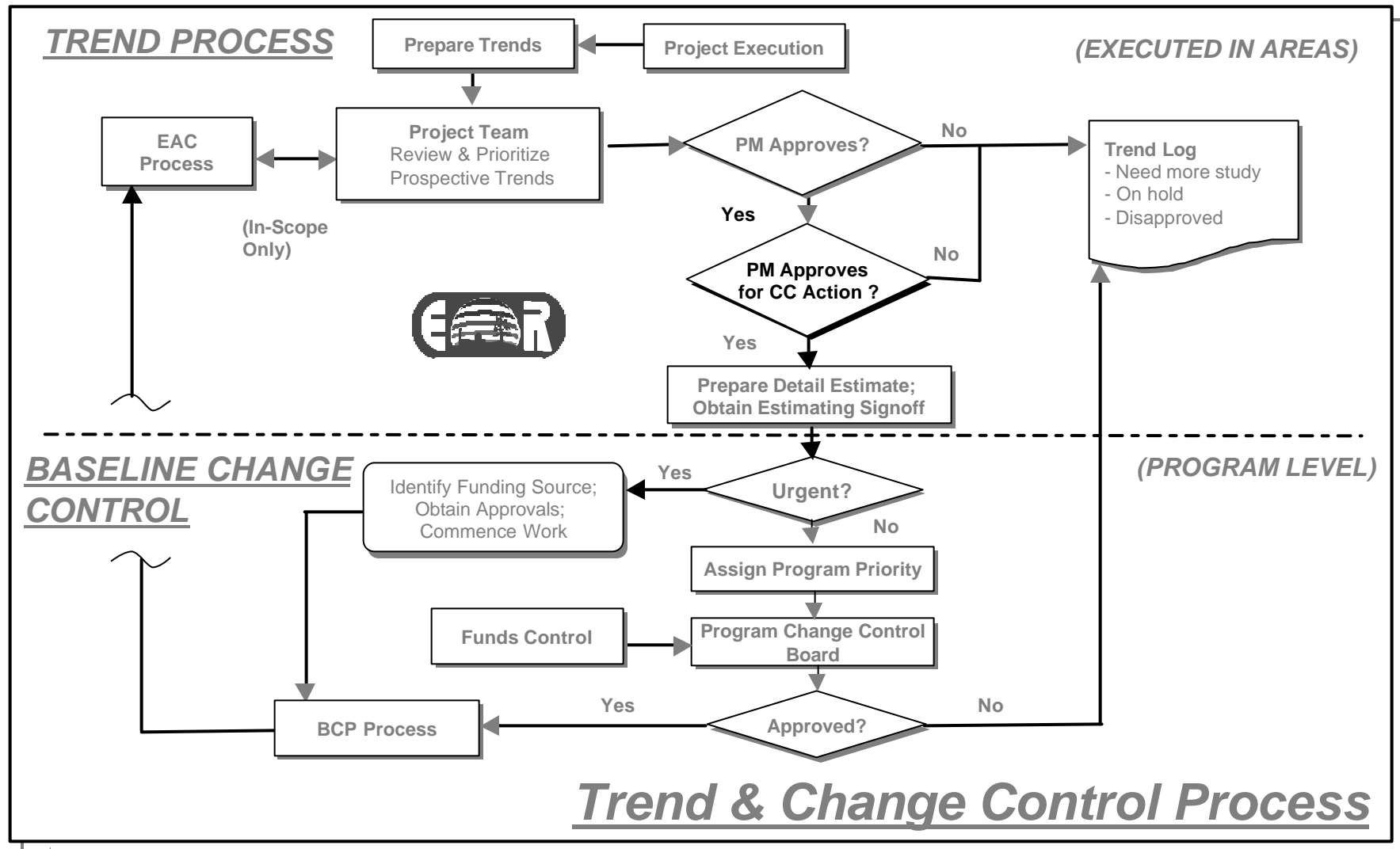




# SRS / ERD Program & Project Controls



# SRS / ERD Program & Project Controls



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## ***SRS / ERD Life-Cycle Cost Estimating***

- ✚ Consists of Scope of Work, Estimate, Resource Loaded Schedule, Contingency Analysis and Reconciliation to previous Estimate
- ✚ Estimates are Quantity Driven & “Bottoms-Up” Activity Based
- ✚ Encompasses entire life of Project (LCAM) - DOE Order 430.1A
- ✚ Developed and owned by Project Managers and Project Teams, including DOE WAG Managers, Technical, Engineering, Compliance, and Project Controls
- ✚ Originally reviewed annually to ascertain best technology selection / process modified to align with life-cycle phase (ECES/CERCLA) of projects (DOE O 413.3 - Critical Decision Points)
- ✚ Monte Carlo Contingency Analysis performed on each project
- ✚ Post 2006 Projects are Done by Parametric Estimating



# MEMBER ZEMME

01. Pre-Workplan Sampling & Analysis Plan
02. Pre-Workplan Characterization
03. RFI/RI/BRA Workplan
04. RFI/RI/BRA Characterization
06. Modeling

07. RFI/RI/BRA Report
09. CMS/FS
14. Regulatory Requirements  
(SB/PP & ROD)
29. Project Support (RI/FS  
Phase)

- 10. Treatability Studies
- 11. Additional Studies
- 12. Additional Characterizations
- 13. Preliminary Engineering
- 15. Detail Engineering & Pre Construction
- 39. Project Support (Remedial Design Phase)

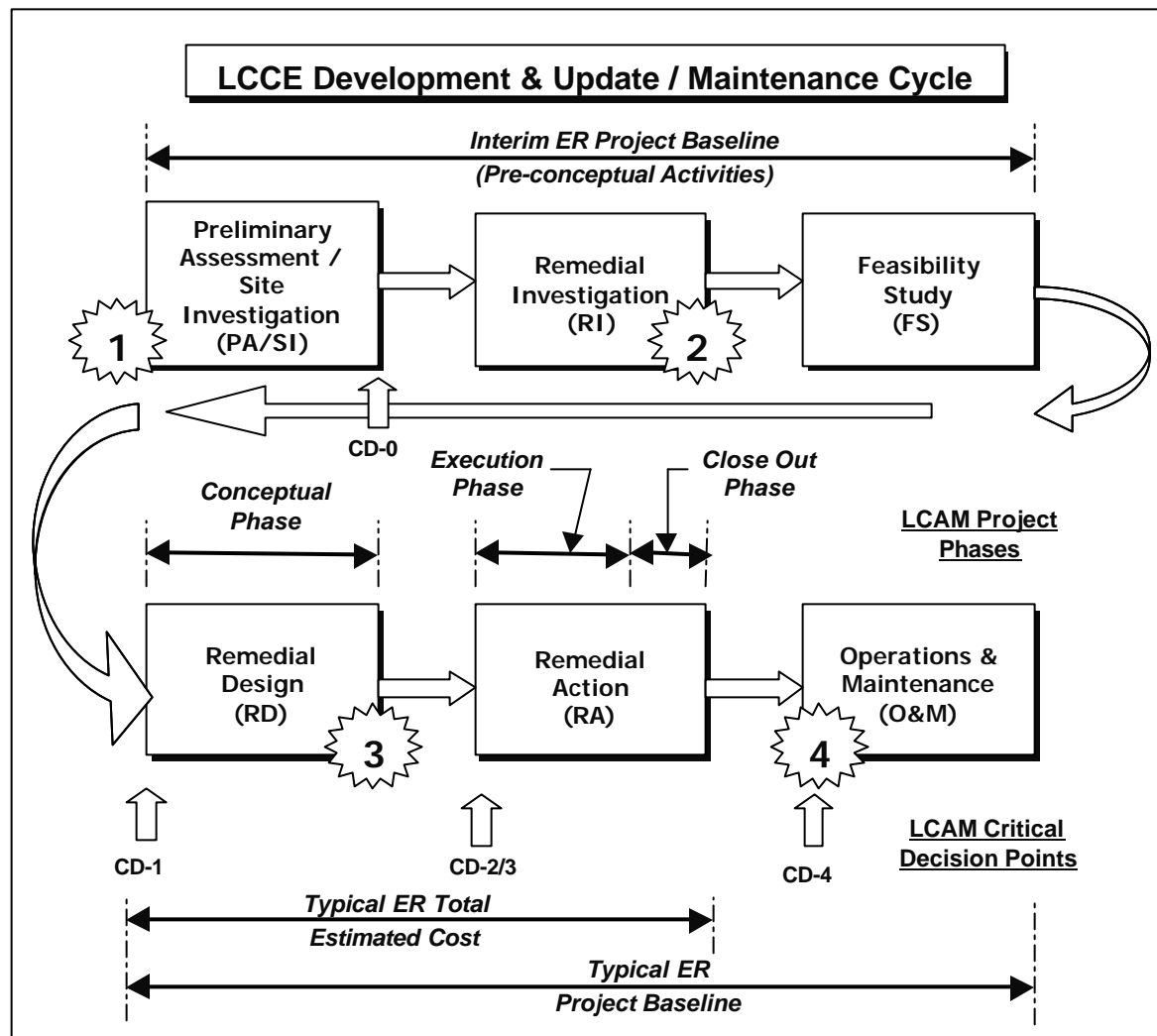
- 05. Interim/Early Action
- 16. Construction
- 17. Post Construction
- 25. Start Up
- 49. Project Support (Remedial Action Phase)

26. Operations  
27. Maintenance  
59. Project Support (O & M Phase)

18. Well Monitoring & Institutional Controls  
28. Compliance Support  
69. Project Support (PC&S / LTM Phase)



# SRS / ERD Life-Cycle Cost Estimating



1

LCCEs will be prepared at project inception and maintained throughout the life of the project. Project inception is defined as that point in time when the Site Evaluation group has completed the Preliminary Assessment of a release site and determined that the site will require further assessment and or remediation.

2

Characterization Activities Complete. Preliminary data indicates a change in scope or technology is required.

3

Remedial Design Complete. This revision will incorporate the definitive estimate prepared for the completed design.

4

Operations Pending (LTS). For those estimates that have operations, the treatment facility is complete and a well founded basis is available to update the cost of activities associated with O& M of the treatment facility over it's projected life-cycle.

5

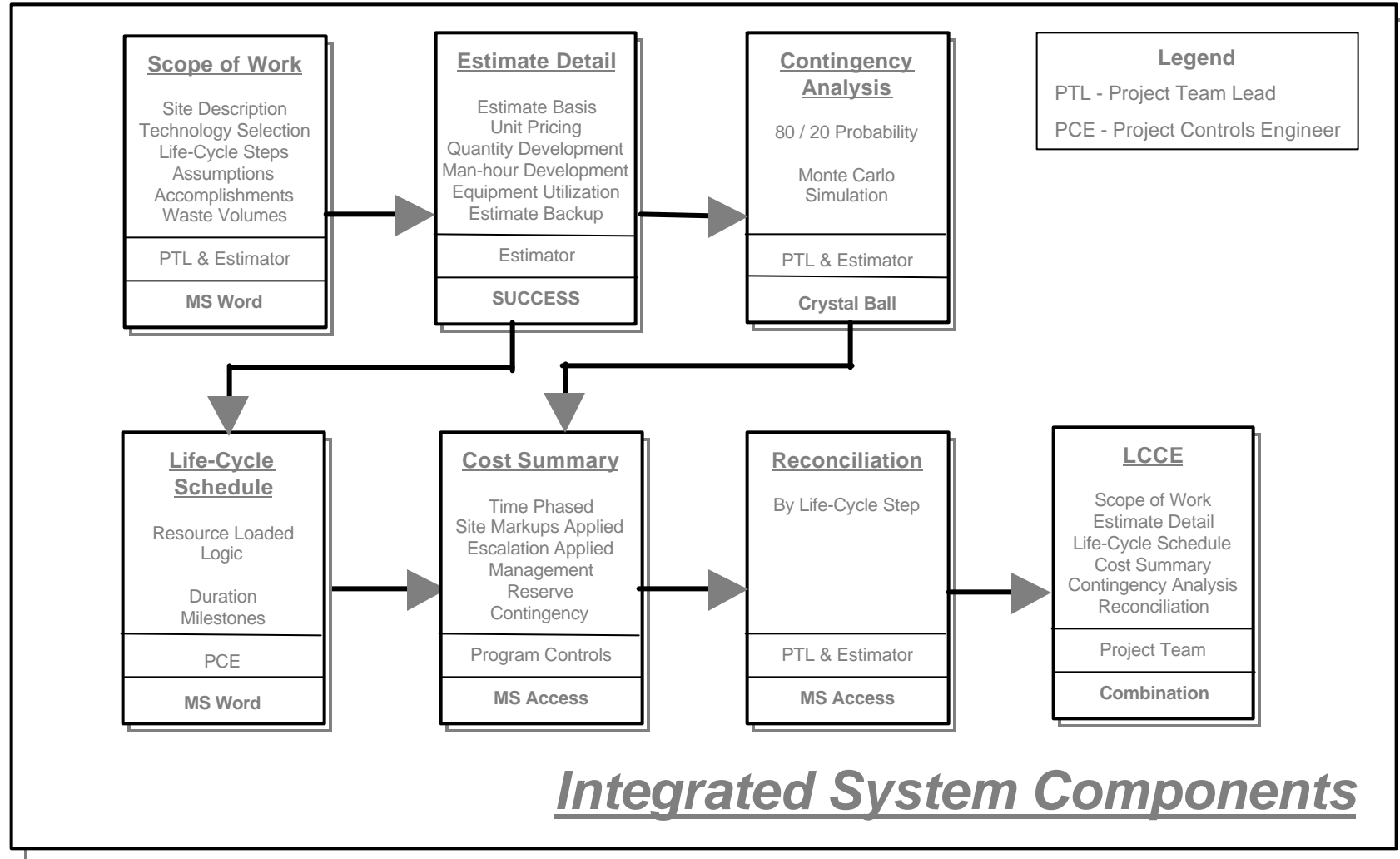
Major Scope or Technology Change. Any LCCE may be updated at any time during the life of the project if a major scope or technology change has been identified.

6

Customer Request. The Project Manager or DOE WAG Manager may request a revision to the LCCE at any time.



# ***SRS / ERD Life-Cycle Cost Estimating***



# SRS / ERD Life-Cycle Cost Estimating

## P Reactor Seepage Basins

PBS No. ER-03, Sub-project No. 1128

### P Reactor Seepage Basin Life-Cycle Cost Summary

		<i>FY99 LCCE Update</i>													
PBS No. ER-03	Sub Project No. 1128	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	Total
<b>Project Phase</b>															
Assessment		\$703	\$273	\$572	\$333	\$2,576	\$722	\$274	\$29	\$0	\$0	\$0	\$0	\$0	\$5,482
Interim Actions		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Remediation		\$0	\$0	\$0	\$170	\$317	\$2,935	\$4,061	\$4,050	\$3,356	\$569	\$0	\$0	\$0	\$15,458
Project Support		\$91	\$91	\$81	\$110	\$242	\$147	\$147	\$85	\$65	\$54	\$0	\$0	\$0	\$1,113
Escalation		\$0	\$0	\$18	\$33	\$263	\$434	\$659	\$751	\$734	\$155	\$0	\$0	\$0	\$3,047
Management Reserve		\$0	\$11	\$20	\$19	\$101	\$127	\$154	\$147	\$125	\$23	\$0	\$0	\$0	\$727
Contingency		\$0	\$105	\$193	\$186	\$979	\$1,220	\$1,481	\$1,416	\$1,197	\$224	\$0	\$0	\$0	\$7,001
Total Life-Cycle Cost															
	(\$000)	\$794	\$480	\$884	\$851	\$4,478	\$5,585	\$6,776	\$6,478	\$5,477	\$1,025	\$0	\$0	\$0	<b>\$32,828</b>



# ***SRS / ERD Life-Cycle Cost Estimating***

**P Reactor Seepage Basins (FY99 LCCE Update)**

